

THE INTERNATIONAL PROGRAMS OF THE FEDERAL HIGHWAY ADMINISTRATION

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Office of International Programs

HISTORICAL PERSPECTIVE

From the earliest beginnings of the Federal Highway Administration (FHWA) 103 years ago, we have had an international element within our mission. Back then in 1893, our predecessor agency, the Office of Public Road Inquiry, had as its charge to investigate and disseminate information on "road making." One of its first published studies sought experiences from abroad we could learn from and was titled "Cost of Hauling Farm Products in Europe." We have continued to benefit from such international exchange over the years. Key elements of the U.S. highway program on into the future will continue to draw from international interactions as well as have application abroad.

But a little more historical perspective. In the 1930's a new dimension was added to FHWA's international activities when we became involved in the design and construction of the Inter-American Highway to link the Americas. This was further elevated and accelerated during World War II when, for defense purposes, we had projects in Panama and Canada as part of the Inter-American Highway. After the war, FHWA shifted to assisting countries like The Phillippines and Turkey to reconstruct and rehabilitate war-damaged road systems and to develop their highway organizations.

Assignment of FHWA staff members abroad to assist other countries continued through the 1970's. In total, the FHWA and its predecessors have sent engineers and technicians to over 70 countries throughout the world. From the deserts of Sudan and Jordan, to the mountains of Nepal and Bolivia, from the jungles of the Amazon and Mindanao, to the plateaus of Yemen and Ethiopia, and to the hills of Laos and Cambodia, FHWA engineers and technicians have helped develop local personnel and institutions to build and maintain roads. Roads that are an essential part of the economic development of any nation. Research recently completed by FHWA quantifies an important relationship between transportation and economic growth. Over the period 1950 to 1989, U.S. industries realized production cost savings averaging 18 cents annually for each dollar invested in the road system. This is an average result for the U.S. highway system as a whole over the 40 year period, which highlights the positive role of highway investment in fostering economic growth.

As FHWA undertook to build the Interstate Highway System with the States, we developed new standards, techniques and materials for this network of high speed,

high standard roads. As the 70,000 kilometer (43,000 mile) system was opened to traffic over the years, and the economic development it supported boomed, visitors from all over the world came to see and to learn from the lessons we had developed through the Interstate Highway System and other highway developments in the U.S. Our colleagues from abroad brought these home, refined our lessons for their conditions, and further developed those technologies and methodologies.

CURRENT FOCUS

Vision and funding are key elements of success for any nation's highway program. Now that the Interstate Highway System is essentially complete, we are focusing our efforts and the Highway Trust Fund on the National Highway System (NHS). The NHS is a network composed of over 262,000 kilometers of America's most strategically and economically important roadways. This system includes the Interstate Highway System, most urban and rural principal arterial roadways, the defense highway network and its strategic highway connectors, as well as connectors to the most important intermodal terminals. Although the NHS constitutes only 4 percent of the total road mileage in the U.S., it carries 75 percent of the commercial truck traffic and 40 percent of all vehicular travel.

The era of highway system expansion in the U.S. is mostly over. Even with the NHS, our domestic highway program is focused mainly on maintaining and extending the efficiency, life and durability of existing facilities.

Strategic Highway Research Program

To this end, a high point of the development of new and improved technologies in the past decade was the 5 year \$150 million Strategic Highway Research Program (SHRP). This was a highly focused research effort from 1988-1993 that resulted in over 130 products in four areas of highway work. These four areas are asphalt, concrete & structures, highway operations (snow & ice technology, work zone safety devices), and long-term pavement performance (LTPP). We have had extensive collaboration with our international colleagues during the research and development phase of SHRP, and continue to, especially with LTPP. Today we are promoting and implementing many of those products and further refining others that produce longer lasting, higher quality roads and bridges.

A few SHRP products that may have interest abroad include the following.

Superpave (Superior Performing Asphalt Pavements) - The Superpave mix design and analysis system is a significant advancement in hot-mix asphalt pavement design. By taking into account climatic conditions and projected traffic loads, the system allows highway engineers to create pavements that will better resist rutting and cracking, and that will last longer. Our Superpave

implementation has two target dates: 1997 for the States to adopt the Superpave binder specification, and 2000 for the full-scale use of the Superpave volumetric mix design methodology.

Concrete and Structures - For improving construction and maintenance practices for concrete pavements and structures, we have a suite of products. In particular, identifying and mitigating the effects of Alkali-Silica Reactivity (ASR) induced deterioration of Portland cement concrete may be of interest abroad. Additionally, the use of high performance concrete was showcased in a workshop held last March in Houston. We are currently making arrangements for an international high performance concrete conference here in the U.S.

Work Zone Safety Devices - Seven SHRP work zone safety devices are now commercially available in the U.S. These include intrusion alarms, opposing traffic lane dividers, direction indicator barricades, portable rumble strips, flashing stop/slow paddles, portable all-terrain sign and stands, and an electronic queue detector.

Technology Scanning

Not only are we continuing to develop technologies to meet our needs here and taking them abroad, but with our emergence from the preoccupation with the Interstate Highway construction program, over the past five years we have once again actively opened our eyes to what we can learn from abroad to enhance the roads and bridges in the U.S. And we have found that indeed there are many things from abroad that we should import, collaborate on, and not re-invent the wheel.

Since 1990, we have sponsored 21 carefully defined and targeted study tours all around the world - what we call technology scanning trips. We have learned and brought back road building technologies like stone mastic asphalt (SMA) from Europe, different winter maintenance techniques and equipment from Europe and Japan, management approaches like contracting alternatives which can improve construction quality assurance, and policy perspectives like increasing the use of inland waterways and short sea shipping in combination with other modes for intermodal transportation.

International Collaboration

The collaboration which started during the research and development phase of SHRP has now been expanded to other areas as well. In addition to continuing work under the LTPP program with Canada and other countries, FHWA currently has joint activities on other subjects with countries like France, Japan, Hungary, Korea, and Sweden. Multilateral and international organizations have provided increasingly effective venues for technical deliberations and collaboration as well. FHWA is currently active in the various committees, panels and forums of the following organizations: Asia Pacific Economic Cooperation (APEC); the Organization for Economic Cooperation and

Development (OECD); the International Road Federation (IRF); the ITS World Congress (ITS-America/ERTICO/VERTIS); the World Interchange Network (WIN); and the World Road Association (PIARC).

THE FUTURE

Intelligent Transportation Systems (ITS) represents another major focus of the highway program in the post-Interstate era of the U.S. today. This is particularly because we must get the maximum capacity and life from our existing highway facilities. In the U.S., we had a hiatus in ITS development that lasted about 20 years. However, within the past decade, we have caught up with the rest of the world. Some of this progress has been largely through cooperation and collaboration with colleagues in Europe and Japan. We continue to look far and wide for solutions and innovations that will help us in this task.

In both rural and urban areas, the use of advanced ITS communications technology has had impressive results. Some current examples can be cited in Seattle, Washington, where an advanced freeway management system has increased Interstate highway speeds by up to 20 percent, and reduced travel time by 50 percent. The Minnesota Guidestar system has allowed commuters to cut their travel time by 35 percent.

By 2020, operational tests will have demonstrated the technical feasibility of automated highways. In San Diego, California, an experiment is under development to test the feasibility of electronically "driven" and controlled automobiles. The overall project goal is to maximize roadway capacity by allowing computers to regulate vehicle speeds and the flow of traffic on a given highway through a totally hands-free environment. The actual tests are slated for later this year. Automated highways are likely to yield yet unimagined benefits in the future - much like the Interstate Highway System at its inception. All of these developments further positions the U.S. to share our experience with other countries.

OUTREACH

Thus building on a long history and some recent history, we will continue international activities, although their orientation and emphasis may have changed. FHWA is always looking for technological and information exchange with our colleagues around the world. A few examples of what we are doing and what we foresee:

More effort will be spent on identifying, disseminating and demonstrating innovations from abroad in the U.S., as well as providing U.S. practitioners with information on how to access international sources directly.

Due to shrinking resources, more of our international technical assistance will be

conveyed through technology transfer networks and less through long-term bilateral arrangements. Technology transfer centers and networks are proving to be a cost-effective means of delivering assistance and exchanging technology. The development of telecommunications services is also rapidly improving their reach.

FHWA sponsors several important international technology and training initiatives. FHWA plays a lead role in managing the Pan-American Institute of Highways which provides technology transfer and training throughout Latin America. FHWA is also sponsoring technology transfer centers and networks in South Africa, Russia, and Finland with the Baltic nations of Estonia, Latvia and Lithuania.

We are a founder of the new World Interchange Network (WIN), a global road information exchange network with nodes in about 25 countries. WIN is particularly focused on meeting the technical needs of professionals in developing countries and countries in transition for access to foreign experts and practices by linking those with technical questions with those who have the answers.

FHWA also supports a Border Exchange Program for technology transfer between the border States of the U.S. with Canada and Mexico.

FHWA is cooperating with Russia and South Africa under bilateral agreements with each country. We are involved in Russia and South Africa because they present opportunities as they make difficult transitions from their former political systems to the new. We are helping Russia to improve the organization and management of its highway program, to institute competitive bidding, to improve internal technology transfer, and to use U.S. pavement and bridge techniques. In cooperation with the World Bank, we also advise Russia on the administration of World Bank highway loans. In South Africa we are helping to improve internal training and technology transfer, and we are testing a promising pavement design technique from there.

We offer scholarships to foreign researchers to work at FHWA's laboratory, and we through our National Highway Institute make courses available to foreign participants.

POINT OF CONTACT

In summary, the three objectives of FHWA's international activities are (1) to seek out innovations from abroad that could benefit U.S. highway transportation; (2) to promote U.S. highway-related technologies internationally; and (3) to offer technical assistance to less developed countries. The Office of International Programs is the coordinating office for our international activities. We may be contacted at 202-366-0111.